Space Weather Forecast

Issued on Tuesday 25 March 2025 at 01:18 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic storms throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low in the past 24 hours, with occasional Common-class flares. Five sunspot regions now cover the Earth facing solar disc, all of which are magnetically simple. The largest of which is approaching the northwest limb. Recent growth in the leading portion and fading to the rear, with a reclassification, now possessing a large leader. A new spot has emerged around the northeast limb, this appears to have numerous spots and is small to moderate in size.

No Earth-directed Coronal Mass Ejections (CME) were observed leaving the Sun during the 24 hour period.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of early coronal mass ejection effects before fading back to generally background. Solar wind speeds became slightly elevated before falling back to slow/ambient. Interplanetary Magnetic Field peaked at strong levels by 24/0114 UTC, before gradually falling back to weak. The north-south component was Moderate both positively and negatively deflected before falling back to weak. Geomagnetic activity was at Quiet to Active levels (Kp2-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low solar activity is expected, with a slight chance of isolated M-class flares over the next four days.

Solar Wind / Geomagnetic Activity: One very low confidence coronal mass ejection may arrive early in the period. Otherwise, solar winds are expected to continue at slow-ambient levels to start before probably becoming elevated to strong levels with the expected (most probably gradual) arrival of the fast wind from coronal hole 25 from later day 1 (25 Mar), lasting through day 2 into day 3 (26-27 Mar), then gradually easing day 4 (28 Mar).

Quiet conditions initially will probably become Unsettled to Active (Kp3-4), with an increasing Chance of G1-G2/Minor-Moderate storms (Kp5-6) due to coronal hole fast wind influences,

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peaking day 2 or day 3 (26/27 Mar) before easing day 4 (28 Mar).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background levels, with a slight chance of enhancement from any larger flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	30	50	50	30
Strong	**G3**	No	1	5	5	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	No	20	20	15	15
Very Active	**R3-R5 (X Class)**	No	1	1	1	1

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	3	1
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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